

We claim:

1. A mechanical power conversion device for receiving rotary power from a rotary power supply and delivering two independent power outputs, said conversion device comprising:

5 (a) a drive screw connectable to said rotary power supply;

(b) a drive nut engaging said drive screw to receive a drive nut axial force and drive nut torsion therefrom, said drive nut axial force being parallel to said drive screw and said drive nut torsion being about an axis of said drive screw;

10 (c) a first of said two independent power outputs connected to said drive nut to receive said drive nut axial force from said drive nut;

(d) a second of said two independent power outputs connected to said drive nut to receive said drive nut torsion;

15 (e) whereby power from said rotary power supply flows to either or both of said first independent power output and said second independent power output;

2. A plug door system for a transit vehicle having a sidewall and a door opening in said sidewall, said plug door system
20 comprising:

(a) a sliding door;

(b) a carriage having a beam, rod or track for supporting said sliding door;

(c) a rotary power supply;

25 (d) a drive screw connected to said rotary power supply;

(e) a drive nut engaging said drive screw to receive a drive nut axial force and drive nut torsion from said drive screw;

(f) a drive nut bracket engaging said drive nut to receive said drive nut axial force from said drive nut, said drive nut bracket attached to said sliding door or a hanger for said sliding door;

(g) a torsion receiving device connected to said drive nut to receive said drive nut torsion therefrom;

(h) a carriage displacing means connected to said torsion receiving device, said carriage displacing means moving said carriage into and out of a said opening in said sidewall;

(i) a curved track to guide said sliding door so that when said door is opened, said carriage and door move out of said opening and then said door moves axially, along said sidewall of said transit vehicle.

3. A plug door system, according to claim 2, wherein said door system further includes a second sliding door mounted on said carriage to constitute a biparting door system, said second sliding door being moved in a second axial direction, opposite to said first sliding door by a second drive screw having a pitch opposite to said first drive screw, said second drive screw connected to rotate at the same speed as said first drive screw, a second drive nut engaging said second drive screw to receive a second drive nut axial force and a second drive nut torsion from said drive screw, said plug door system having a second drive nut bracket engaging

said second drive nut and connected to said second sliding door to convey said second drive nut axial force to said second sliding door, said plug door system having a second carriage displacing means connected to said carriage and connected to a second torsion receiving device, said second torsion receiving device receiving said second drive nut torsion from said second drive nut.

4. A plug door system, according to claim 2, wherein said door system further includes at least one curved track for guiding rollers attached to said door so that upon opening, said door first move outwardly as said carriage moves outwardly and then move longitudinally along said side wall of said vehicle in opposite directions.

5. A plug door system, according to claim 3, wherein said door system further includes at least one curved track for guiding rollers attached to said doors so that upon opening, said doors first move outwardly as said carriage moves outwardly and then move longitudinally along said side wall of said vehicle in opposite directions.

6. A plug door system, according to claim 2, wherein said drive nut torsion is received by pinions which rotate a crank attached to a link to move said carriage into and out of said opening.

7. A plug door system, according to claim 3, wherein said drive nut torsions are received by pinions which rotate cranks attached to links to move said carriage into and out of said opening.

5 8. A plug door system, according to claim 2, wherein said drive nut torsion is received by a link which move said carriage into and out of said opening.

10 9. A plug door system, according to claim 3, wherein said drive nut torsions are received by links which move said carriage into and out of said opening.

10. A plug door system, according to claim 7, wherein said link is an overcenter link to lock said door when closed.

11. A plug door system, according to claim 8, wherein said links are overcenter links to lock said doors when closed.